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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,106	10/19/2001	Nitin Jain	FOUND-0008	6774

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EXAMINER

DALENCOURT, YVES

ART UNIT	PAPER NUMBER
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2157

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/982,106

Applicant(s)

JAIN ET AL.

Examiner

Yves Dalencourt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44, 46, 47 and 50-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44, 46, 47 and 50-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/30/2007.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This office action is responsive to Request for Continued Examination filed on 01/30/2007.

Response to Amendment

The Examiner has acknowledged the amended claims 12, 16, 18, 25, 29, 31, 38, 39, 40, 41, 46, the cancellation of claims 45, 48 – 49, and the submission of new claims 51 – 70.

Claim Objections

Claims 38 - 40 are objected to because of the following informalities: It is suggested to delete " tangibly " (line 1).

In claim 40, it is suggested to delete " for method " (line 2)

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 12, 16, 25, 29, 38, 39, 41, and 46 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claimed invention as a whole does not accomplish a practical application. That is, it must produce a tangible result".

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application.”). “[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection.” Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 (“It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . .”). In other words, the opposite meaning of “tangible” is “abstract.”

In this case, claims 12, 16, 25, 29, 38, 39, 41, and 46 are directed to an “ abstract idea ” because they do not represent a practical application of the idea. Such claims are lacking “**tangible results**“. There are no tangible results being produced. Therefore, claims 12, 16, 25, 29, 38, 39, 41, and 46 are non-statutory.

Claim 41 has produced result only “ if a forwarding entry having a shared source lookup key matching the destination shared source lookup key is found. But, such claim has not provided ant results when “ the forwarding entry...” is not found.

Claim 46 has produced result only “ if a session entry having an explicit source lookup key matching the derived explicit source lookup key is found. But, such claim

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has not provided any results when "the session entry ..." is not found.

Claims 13 – 15, 17, 26 – 28, 30, 42 – 44, 47, 50 - 51, 54 - 55, 57 - 59, 62 - 63, 65 - 70, are necessarily rejected as being dependent upon the rejection of claims 1 and 6.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12 - 42, 44, 46 - 47, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al (Pat. No. US 6,839,348, Tang hereinafter). Tang incorporates by reference Gleeson et al. (Pat. No 5,959,989, Gleeson hereinafter) in view of Hoffman et al (Pat. No. US 6,094,435, Hoffman hereinafter).

With respect to claim 12, Gleeson shows a method comprising: updating a source-group data structure using information from the control message, the source-group data structure containing data regarding a multicast group [See Fig. 2c of Gleeson, which is a "source-group data structure." It contains multicast group address. See lines 21-32 in column 2 of Gleeson. See lines 30-35 in column 16 for the step of updating the data structure]; and adding an outgoing port index to data source-group data structure, said outgoing port index identifying a port that received the control message [See Fig. 2C, which lists a port index ('port number') in the table. Inserting the source group necessarily adds a port number, because the data structure includes a field for the "port index."].

Tang and Gleeson show substantially all the limitations, but fail to specifically show the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router.

However, Hoffman discloses an analogous system and method for a quality of service in a multi-layer network element, which discloses the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router (figs. 1 – 4; col. 7, line 32 through col. 8, line 61; col. 9, lines 27 – 47, col. 11, line 3 through col. 12, line 6).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tang and Gleeson by receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router as evidenced by Hoffman for the purpose of intelligently forwarding received packets to

one or more appropriate output ports, thereby providing a system and method for handling multicast packets quickly and efficiently in a multi-layer network element.

With respect to claim 13, Hoffman and Gleeson show substantially all the limitations in claim 12, and Gleeson further shows that source-group data structure is a source-group table [See Fig. 2C. Source-group data structure, as it is evident from Fig. 2C, is a table].

With respect to claim 14, Hoffman and Gleeson show substantially all the limitations in claim 12, and Gleeson further shows a further step of creating an entry in an outgoing port lookup table, said entry associating said outgoing port index to said port that received the control message [See Fig. 2B, which shows "port index" ('port number') and the port (designated by MAC address). Creating an entry involves updating the table. See lines 3035 in column 16].

With respect to claim 15, Hoffman and Tang show substantially all the limitations in claim 12, and Tang further shows searching in a forwarding table for a forwarding entry having a destination hardware address matching a destination hardware address for a multicast group indicated by the control message [See from line 35, column 15 to line 3 in column 16 of Tang]; and updating said forwarding entry in said forwarding table if a destination hardware address matching a destination hardware address for said multicast group is found [See from line 35, column 15 to line 3 in column 16 of Tang].

With respect to claim 16, Tang and Gleeson show a method comprising deriving an explicit source lookup key from the control message [See lines 50-67 in column 16 of Tang. S4, which is the specific source address, is the "source lookup key."]; and

retrieving an outgoing port index associated with an entry in a session data structure, said entry corresponding to said explicit source lookup key ["Session data structure" are the rows, in the multicast routing table ("forwarding table"). Each entry of the outgoing interface list is associated with an interface ("outgoing port index") shown in Fig. 3. The retrieval is performed by looking up the forwarding table]; and updating an outgoing lookup table entry corresponding to said outgoing port index with information regarding designated devices in said multicast group indicated by the control message [See Fig. 3 of Tang. The outgoing lookup table entry is either IIF or OIF in the multicast routing table. It is updated in accordance with the description, starting at line 16, column 16 to line 17, in column 19].

Tang and Gleeson show substantially all the limitations, but fail to specifically show the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router.

However, Hoffman discloses an analogous system and method for a quality of service in a multi-layer network element, which discloses the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router (figs. 1 – 4; col. 7, line 32 through col. 8, line 61; col. 9, lines 27 – 47, col. 11, line 3 through col. 12, line 6).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tang and Gleeson by receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router as evidenced by Hoffman for the purpose of intelligently forwarding received packets to

one or more appropriate output ports, thereby providing a system and method for handling multicast packets quickly and efficiently in a multi-layer network element.

With respect to claim 17, Hoffman, Tang, and Gleeson show substantially all the limitations in claim 16, and Gleeson further shows session data structure is a session table. The set of rows, each containing explicit source address in the forwarding address, correspond to a "session table."

With respect to claim 18, Tang and Gleeson show a method comprising determining if the control message establishes shared source distribution trees or explicit source distribution trees [The step is inherent in Tang. Tang's system responds differently depending on the source address, whether it is shared source distribution tree or it is an explicit source distribution tree. If it is a shared distribution tree, the system follows the steps described from line 16, column 15 to line 13, column 16 in Tang. If the message is an explicit one, Tang's system follows the steps described from line 14, column 16 to line 19, column 19]; Other limitations of claim 18 are same as those of claims 12 and 16, with one difference.

The limitations which correspond to those in claim 12 are different than those of claim 12 because of an additional clause, "if the control message establishes shared source distribution trees." Gleeson still meets the limitations, because the steps (which correspond to the limitations of claim 12) apply to both shared source distribution and non-shared.

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Tang and Gleeson show substantially all the limitations, but fail to specifically show the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router.

However, Hoffman discloses an analogous system and method for a quality of service in a multi-layer network element, which discloses the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router (figs. 1 – 4; col. 7, line 32 through col. 8, line 61; col. 9, lines 27 – 47, col. 11, line 3 through col. 12, line 6).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tang and Gleeson by receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router as evidenced by Hoffman for the purpose of intelligently forwarding received packets to one or more appropriate output ports, thereby providing a system and method for handling multicast packets quickly and efficiently in a multi-layer network element.

Claims 19-22 incorporate the limitations of claims 13-15 and 17. The reasons for the rejection of claims 13-15 and 17 apply to claims 19-22. Even though the limitation of claims 20 and 21 mention, "if the control message establishes shared source distribution trees," it makes little difference. Gleeson's features apply for both shared and explicit distribution trees.

With respect to claim 23, Tang shows determining if the control message is a hello or join/prune message [identification of the message type is inherent in multicast network device in Tang. MND's implement PIM protocol. See lines 15-39, column 10]

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and performing said determining, updating, a source-group data structure, adding, deriving, retrieving, and updating an outgoing lookup table entry only if said control message is a join/prune message. [See the above discussion of Tang in the preceding claims. All of the preceding functions are only performed when the message is a join message. The 'group forwarding table' 250 in Fig. 2C can only be updated upon join/prune, because it requires subscription data changes.

With respect to claim 24, Tang's device implements PIM hello [See lines 15-39, column 10]. Implementation of hello entails creating or updating a neighbor list using said hello message, said neighbor list identifying address and port information regarding device, which sent the control message. In other words, the limitation merely repeats what any system that implements hello is capable of performing.

Claims 25-37 substantively incorporate the limitations of claims 12-24, but in apparatus form rather than in method form. The reasons for the rejection of claims 12-24 apply to claims 25-37.

Claims 38-40 substantively incorporate the limitations of claims 12, 16 and 18, but in software product form rather than in method form. The reasons for the rejection of claims 12, 16, and 18 apply to claim 38-40.

With reference to claim 41, Tang shows deriving a shared source lookup key from multicast group information in the control message [See from line 15, column 15 to line 3, column 16 in Tang. G1 is the shared source lookup key.]; searching a forwarding data structure for a forwarding entry having a shared source lookup key matching the shared source lookup key [See from line 15, column 15 to line 3, column 16 in Tang. G1

is matched. See more specifically, lines 51-56, column 15]; if a forwarding entry having a shared source lookup key matching the destination shared source lookup key is found, revising an associated outgoing port in the forwarding entry to match an incoming port for the control message. See lines 51-56, column 15. Note that OIF field is revised]; extracting multicast group information from the control message; updating a source-group data structure with the multicast group information; and adding an outgoing port index to the source-group table, the outgoing port index identifying a port that received the control message (see Fig. 2C; col. 2, lines 21 – 32; col. 10, lines 21 – 32; and col. 16, lines 30 – 35 of Gleeson et since such reference is being incorporated in Tang for further improvement).

Tang and Gleeson show substantially all the limitations, but fail to specifically show the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router.

However, Hoffman discloses an analogous system and method for a quality of service in a multi-layer network element, which discloses the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router (figs. 1 – 4; col. 7, line 32 through col. 8, line 61; col. 9, lines 27 – 47, col. 11, line 3 through col. 12, line 6).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tang and Gleeson by receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router as evidenced by Hoffman for the purpose of intelligently forwarding received packets to

one or more appropriate output ports, thereby providing a system and method for handling multicast packets quickly and efficiently in a multi-layer network element.

With respect to claim 42, Tang shows that the shared source lookup key is a destination media access control (MAC) address for the control message. See lines 42-45, column 22. Note that G1 (an address) is looked up, for one embodiment in which it is MAC. (Other embodiment has G1 as IP address, according to lines 42-45, column 22.

With respect to claim 43, Tang shows that source-group data structure is a source-group table [See Fig. 3].

With respect to claim 44, Tang shows that the forwarding data structure is a forwarding table ('multicast routing table'). See Fig. 3.

With respect to claim 46, Tang shows deriving an explicit source lookup key from the control packet [See lines 27-49, column 16. S4 is the source lookup key and it is an address]; searching a session data structure for a session entry having an explicit source lookup key matching the derived explicit source lookup key ["Session data structure" correspond to the rows, in the multicast routing table ("forwarding table"). Each entry of the outgoing interface list is associated with an interface ("outgoing port index") shown in Fig. 3. The retrieval is performed upon searching the session data structure. See from lines 27-49, column 16.]; if a session entry having an explicit source lookup key matching the derived explicit source lookup key is found, revising an associated outgoing port in the session entry to match an incoming port for the control message [See Fig. 3 of Tang. The outgoing lookup table entry is either IIF or OIF in the

multicast routing table. It is revised in accordance with the description, starting at line 16, column 16 to line 17, in column 19].

Tang and Gleeson show substantially all the limitations, but fail to specifically show the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router.

However, Hoffman discloses an analogous system and method for a quality of service in a multi-layer network element, which discloses the step of receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router (figs. 1 – 4; col. 7, line 32 through col. 8, line 61; col. 9, lines 27 – 47, col. 11, line 3 through col. 12, line 6).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tang and Gleeson by receiving a control message at a layer 2 switch of said VLAN, said control message sent by a layer 3 router as evidenced by Hoffman for the purpose of intelligently forwarding received packets to one or more appropriate output ports, thereby providing a system and method for handling multicast packets quickly and efficiently in a multi-layer network element.

With respect to claim 47, Tang shows that the explicit source lookup key comprises a multicast source network address, a destination network address, and incoming port for the control message and a protocol type. See Fig. 3. Any element of each row in the multicast routing table maybe used as a key. Note that even though protocol type is not included in the table, Tang's feature still meets the limitation, because the limitation does not require the presence of the port type. The limitation

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prescribes some "combination" of "source network address, destination network address, and incoming port."

Claim 50 substantively incorporates the limitations of claim 45, and the reasons for the rejection of claim 45 apply to claim 50.

With respect to claims 51 - 70, their limitations already have been discussed with claims 12-44, 46 - 47, and 50 respectively.

Contact Information

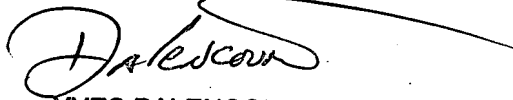
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yves Dalencourt whose telephone number is (571) 272-3998. The examiner can normally be reached on M-TH 7:30AM - 6: 00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 09, 2007



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